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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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In the Matter of:	)	
	)	
Amendment of Part 25 of the Commission's	)	
Rules to Establish Rules and Policies	)	
Pertaining to the Second Processing Round	)	IB Docket No. 96-220
of the Non-Voice, Non-Geostationary Mobile	)	
Satellite Service	)	

COMMENTS OF

LEO ONE USA CORPORATION

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Economist

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EXECUTIVE SUMMARY

In these comments Leo One USA outlines its views on how this proceeding should be resolved. Specifically, Leo One USA supports the Commission's underlying policy goal, repeated throughout the Notice, of introducing additional competition and new NVNG MSS services for the benefit of the public. In this regard Leo One USA believes the following policies will help resolve this proceeding. **First**, Leo One USA agrees with the Commission's proposals to limit applicants eligible to be considered in the second NVNG MSS processing round to those companies without an ownership or attributable interest in existing NVNG MSS licensees and to expand the definition of attributable interests. **Second**, Leo One USA agrees with the Commission's proposal to require each pending eligible NVNG MSS applicant to demonstrate that it has the financial qualifications to construct, launch and operate for one year the entire proposed NVNG MSS system. **Third**, Leo One USA agrees with the Notice that the Commission should not mandate a virtual constellation, consortium or other type of forced settlement. **Fourth**, Leo One USA strongly supports the Commission's basic technical proposals to timeshare new NVNG MSS systems with the National Oceanic & Atmospheric Administration ("NOAA") and Department of Defense ("DOD") MetSat programs as well as with the currently licensed VITA NVNG MSS system. **Fifth**, Leo One USA has reviewed the frequency plans specified for Little LEO System 1, Little LEO System 2, and Little LEO System 3 and recommends certain alterations to these plans in order to facilitate the introduction of more competition for NVNG MSS services. Specifically, Leo One USA is proposing as replacements a new Little LEO System A and Little LEO System B to ensure the possibility that at least two new global systems will be licensed that are capable of providing near real-time services. Only through this or some other similar reconfiguration will the public be provided the opportunity

to enjoy the benefits of new competitive NVNG MSS systems. Taken together, expeditious adoption of these policies will enable the public to quickly reap the benefits of new competitive NVNG MSS systems.

An analysis of the competitive characteristics of the NVNG MSS industry as currently structured leads directly to the conclusion that additional economically viable entrants, capable of effectively competing with the existing licensees and providing new and innovative services, are needed if the public is to reap the maximum benefits of a competitive NVNG MSS service.

The Notice proposes that the structure-conduct-performance (SCP) paradigm of modern industrial organization be used to analyze how market performance would be affected by the introduction of new competitive Little LEO systems. The main application of the SCP paradigm in public policy has been to antitrust policy and, especially, in the analysis and evaluation of mergers. The Federal Trade Commission ("FTC") and the Department of Justice ("DOJ") have developed an analytical framework for applying the SCP paradigm in practice: the DOJ and FTC *Merger Guidelines*.

The first step in determining the effect of any policy toward market structure is to define the relevant market or markets. There are numerous markets in which NVNG MSS systems may offer services. Although factual determinations at this stage of the NVNG MSS industry are necessarily subjective, Leo One USA has identified a number of distinct markets or market segments as defined by the *Guidelines*. These market segments are then further divided based on coverage, length of outages (ability to provide real time services) and the particular industry being served. In general, near real-time services tend to be separate markets because, in most cases, the value enhancement achieved by the ability to have near real-time communications dwarfs the service cost imposed for

the capability. This added value can be represented in examples that involve safety of human life as well as those that incorporate high value assets.

Once a relevant market is defined, the next task is to determine which firms are participants in that market and then to estimate market concentration. Leo One USA has identified 21 classifications of firms that could potentially compete in the identified markets. Of the markets identified in this economic analysis, one third of the total markets will not be served by any service provider, including Orbcomm, Starsys or VITA. These markets require near real-time communications and global or nationwide geographic coverage. In another 25% of the markets, one or more of the first round licensees will be the only potential service provider. These markets can best be characterized as monopoly or duopoly markets. In the remaining markets, Little LEO systems would face effective competition from multiple alternative sources such as cellular, personal communications services ("PCS") and the specialized mobile radio service, as well as terrestrial data system suppliers. These markets tend to be very specialized non-ubiquitous local urban markets.

Licensing of new, second round NVNG MSS systems would have a significant impact on the first two groups of markets. A new NVNG MSS system would be expected to use its capacity to provide a new service in many of the markets that will not be served by first round licensees and to increase competition significantly in others.

In the markets that cannot be served by the current NVNG MSS licensees, the introduction of a second round licensee with a near real-time system would have a significant competitive impact. A provider such as Leo One USA would either provide an entirely new service or would allow a large reduction in price (and/or increase in quality) to consumers. It is in these markets that the gain

to consumers would be the most significant (accounting for the largest gain in consumer surplus) and to which a new entrant would be expected to allocate capacity first.

In the markets where the first round licensees will provide the only low-cost alternative, the entry of new systems similar to the one proposed by Leo One USA would result in a significant decrease in concentration and could be expected to lead to significant price decreases and, thus to benefits to consumers.

As the Commission recognizes, market concentration is a significant determinant of whether a firm, or a group of firms acting collectively, could successfully exercise market power, to the detriment of consumers. Without the addition of the second round licensees, the relevant NVNG MSS markets will be very highly concentrated. Even under the most competitive market structure involving only first round licensees concentration will greatly exceed the threshold identifying a "highly concentrated" market using the Herfindahl-Hirschman Index ("HHI"). Under this structure, the HHI would be at least 5962 in the relevant markets. If the Commission were to allocate the remaining unassigned NVNG MSS spectrum to a first round licensee, such as Orbcomm, the HHI in these markets would rise to at least 6854 (an increase of 15%). In contrast, if the spectrum is allocated to permit licensing of two additional NVNG MSS systems that have sufficient spectrum to compete with the first round licensees, the HHI would fall significantly to at least 2812 (a decrease of 53%).

There would be significant benefits for consumers if the Commission were to authorize two new, economically viable NVNG MSS systems capable of providing a full array of services. Specifically, consumers would have access to new, low-cost telecommunications services that will not be available from any first round licensee. Additionally, there would be a significant

improvement in the competitive structure of markets that will be served by existing NVNG MSS licensees. All of this would translate into a tremendous increase in consumer surplus. For this reason, the Commission should exclude the existing licensees from being eligible to participate in the second NVNG MSS processing round.

Leo One USA supports the Commission's proposals for defining affiliation. As is discussed above, the existing licensees have the ability to exert undue market power. If one of these licensees has a pecuniary interest in a new licensee or the ability to control or influence the new licensee, it would further inhibit competition by allowing the existing licensee to perpetuate its market power to the detriment of the public. The licensee would be in a position to manipulate prices and the availability of services.

Leo One USA believes that the proposed attribution rules are entirely reasonable. Additionally, the Commission should be extremely careful to ensure that *any* party that has the "ability to control" or the "ability to influence" be deemed to have an interest. The Commission has a long history of legal precedent as to what is "de jure" and "de facto" control. The Commission should use its existing case law in making determinations as to whether a party has "control."

The Commission's application of these attribution rules should lead to dismissal of the pending second round applications of Orbcomm, GE Starsys and VITA. Additionally, the pending second round application of GE Americom should be dismissed due to GE Americom's ownership of an 80% interest in GE Starsys. Finally, the application of FACS should be dismissed because its agreement with VITA is the type of management, joint marketing or joint operating agreement envisioned by the proposed attribution rules and because of FACS' ability to control and influence the operations of VITA.

Leo One USA encourages the Commission to assign the remaining NVNG MSS spectrum in a manner that will enhance the introduction of competition from second round licensees. This goal can be fulfilled, however, only through a careful structuring of the remaining frequency resources for this service. It is not necessarily true that five licenses are better than four licenses. A close examination of the market opportunity associated with each license must be made before it can be determined how many and what type of licenses to issue. If the spectrum assigned is not efficiently organized, it could result in a less competitive market rather than a more competitive market even though more licenses are issued. Although Leo One USA generally supports the approach the Commission has pursued in the Notice, Leo One USA urges the Commission to modify its proposal, detailed below, in order to maximize the competitive impact of licensing additional NVNG MSS systems. Specifically, under Leo One's proposed allocation, capacity would be more evenly distributed among licensee suppliers, resulting in lower concentration among suppliers, greater efficiency, and higher consumer surplus. It is for this reason that Leo One USA proposes in these comments that the Commission amend its channel assignment plan to provide for two rather than three second round systems: Little LEO System A and Little LEO System B. This channel assignment plan will ensure the greatest number of robust and efficient competitors for the greatest number of NVNG MSS services.

Leo One USA proposes that System A use the combined downlink spectrum of Little LEO System 1 and Little LEO System 3. For the uplink it is proposed that the spectrum available for narrowband operation be used equally by System A and System B. Specifically for the downlink, it is proposed the 400.15-400.505 and 400-645-401 MHz bands will be time shared with the DMSP satellites, and the 400.505-400.5517 MHz band will be time shared with VITA. This sharing will

be on a non-interference basis to the DMSP and VITA systems. For the uplink, the following is proposed: (i) the 150.00-150.05 MHz band segment, which is allocated for LMSS (no maritime or aeronautical use), will be time shared with the Russian Navigation Satellite System (RNSS) as well as with land mobile radios in most countries; (ii) the 149.81-149.855 MHz band segment will be time shared with VITA; and (iii) the 148.905-149.81 MHz band will be dynamically shared with Orbcomm and System B. This sharing will all be accomplished using dynamic channel assignment techniques. This system will have a total downlink capacity of 1,049 Mbits per day or 90% of Orbcomm's capacity and a total uplink capacity of 1,135 Mbits per day or 98% of Orbcomm's capacity. Thus, it will be able to provide 90% of Orbcomm's capacity. This reconfigured System A will increase system availability to levels consistent with market requirements and provide a means to assure a downlink subscriber channel for near continuous availability.[1] It will also allow the system operator to serve land, aeronautical and maritime requirements. With these parameters, this system will provide the competitive benefits to the public that the Commission is striving to achieve in this rulemaking.

For new Little Leo System B, Leo One USA proposes that this system use the downlink spectrum that was proposed by the Commission for Little LEO System 2. For the uplink it is proposed that the spectrum available for narrowband operation be used equally by System A and System B.

Specifically for the downlink, it is proposed the NOAA LRPT bands (137.025-137.175 MHz and 137.825-138.0 MHz) be used exclusively on a 100% availability basis until the first European

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[1] An analysis demonstrating near continuous channel availability of this system appears in Appendix F.

METOP-1 MetSat is launched in 2002. Once two MetSats begin using the LRPT band and 100 percent availability cannot be assured, it is proposed that the TIP channel (137.333-137.367 MHz and 137.753-137.787 MHz) sharing with NOAA begin. This will ensure that the availability remains close to 100 percent and near real-time services are preserved.

For the uplink, the following is proposed: (i) the 149.95-150.0 MHz band segment, which is allocated for LMSS (no maritime or aeronautical use), will be time shared with the Russian Navigation Satellite System (RNSS) as well as with land mobile radios in most countries; (ii) the 149.855-149.9 MHz band segment will be time shared with VITA; and (iii) the 148.905-149.81 MHz band will be dynamically shared with Orbcomm and System A. This sharing will all be accomplished using dynamic channel assignment techniques. This would create a system with 92% of Orbcomm's capacity that would be able to provide near continuously available[2] services from land, sea and air.

A comparative analysis of market structures reveals a significant reduction in market concentration if System A and System B are implemented instead of the three systems proposed in the Notice. If Orbcomm's second round amendment is accepted, this would result in a HHI of 7207. In the Notice the Commission proposes to introduce three new NVNG MSS. These three systems would reduce the HHI from today's 6800 to 3328. This would result in a highly concentrated market under the *Guidelines*. If the Commission were to adopt the proposal of Leo One USA to create Little LEO System A and Little LEO System B, the HHI would be reduced to 2885. Thus, the HHI for the Leo One USA spectrum allocation proposal is 875 points lower than the HHI for the proposal

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[2] *Id.*

in the Notice. The *Guidelines* define an HHI change of 100 points or more to be significant for purposes of a competition analysis.

Leo One USA supports the Commission's proposal to use the financial qualification tests for the domestic fixed-satellite service to ensure that unqualified NVNG MSS applicants do not warehouse spectrum. Here, where there is not sufficient spectrum to accommodate all the applicant's requirements, it is critical that underfinanced companies not receive licenses. The Commission's extensive experience in this area has shown that licensees without sufficient available resources spend a significant amount of time attempting to raise the necessary financing for their systems and that those attempts often end unsuccessfully. An undercapitalized applicant may thus preclude a fully capitalized applicant from implementing its plans, thereby denying competitive services to the public.

Leo One USA supports the Commission's determination that the public interest would not be served by mandating participation in a "virtual constellation" or similar consortia. Although the virtual constellation approach would provide an expeditious means to dispose of the pending second round NVNG MSS applications, it would not fulfill the Commission's stated goal to "enhance competition [that] will lead to lower prices and increased service options for customers." Implementation of the virtual constellation will merely eliminate the opportunity for the introduction of new competitive NVNG MSS systems capable of serving all Little LEO markets. This result would not be in the public interest.

The Commission correctly concludes that competitive bidding or auctions is particularly problematic for global satellite systems. The initiation of auctions in the United States may lead to auctions of NVNG MSS landing rights throughout the world and may trigger auctions of land rights for all global satellite systems. Leo One USA is also concerned that the specter of sequential auctions may actually cause significant delays in the introduction of competitive NVNG MSS systems. The uncertainties created by auctions also increase the probability that capital markets will withhold funding for NVNG MSS systems until worldwide authorizations are obtained. Notwithstanding the drawbacks of auctions for NVNG MSS systems, Leo One USA would support the use of auctions if mutual exclusivity remains after application of the Domsat financial qualification test. Although auctions may create delays in NVNG MSS system implementation, regulatory logjam will cause an even more detrimental delay. In the event no other options are available, the Commission should auction second round NVNG MSS licenses.

The imposition of positioning determination requirements on subscriber terminals imposes an unfair economic burden on the user of the terminal equipment. It also adds additional technical complexity to the equipment as well as potentially requiring additional RF spectrum.

The U.S. should adopt a policy prohibiting exclusive agreements that foreclose competing Little LEO licensees from serving a foreign market.

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COMMENTS OF LEO ONE USA CORPORATION

Leo One USA Corporation ("Leo One USA"), by its attorneys, hereby files these comments in response to the Commission's Notice of Proposed Rulemaking[1] in the above-captioned matter.

I. INTRODUCTION

Leo One USA has an application pending before the Federal Communications Commission ("FCC" or "Commission") to construct, launch and operate a 48 satellite Non-Voice, Non-Geostationary Mobile Satellite Service ("NVNG MSS") system.[2] This system has been carefully designed so that "near real-time" global data services can be offered to the public. Leo One USA is eager to implement its proposed NVNG MSS system and urges the Commission to promptly

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1 *Amendment of the Part 25 of the Commission's Rules to Establish Rules and Policies Pertaining to the Second Processing Round of the Non-Voice, Non-Geostationary Mobile Satellite Service*, IB Docket No. 96-220, *Notice of Proposed Rulemaking* (Oct. 29, 1996)("Notice").

2 The Commission has licensed only two commercial NVNG MSS systems. The first licensee, Orbital Communications Corporation ("Orbcomm") has only two satellites in orbit at this time. The other licensee, GE Starsys Global Positioning, Inc. ("GE Starsys"), according to the Commission's records has not yet launched any satellites or commenced satellite construction. A third, noncommercial NVNG MSS license has been granted to Volunteers in Technical Assistance ("VITA"). VITA is a not-for-profit corporation licensed to implement a one satellite NVNG MSS system to provide limited store-and-forward data services to not-for-profit organizations.

conclude this proceeding and process the pending applications so the public can obtain the benefits of new competitive NVNG MSS services as soon as possible.

In these comments Leo One USA outlines its views on how this proceeding should be resolved. Specifically, Leo One USA supports the Commission's underlying policy goal, repeated throughout the Notice, of introducing additional competition and new NVNG MSS services for the benefit of the public. In this regard Leo One USA believes the following policies will enable the expeditious licensing of new NVNG MSS systems. **First**, Leo One USA agrees with the Commission's proposals to limit applicants eligible to be considered in the second NVNG MSS processing round to those companies without an ownership or attributable interest in existing NVNG MSS licensees. **Second**, Leo One USA agrees with the Commission's proposal to require each pending eligible NVNG MSS applicant to demonstrate that it has the financial qualifications to construct, launch and operate for one year its entire proposed NVNG MSS system. **Third**, Leo One USA agrees with the Notice that the Commission should not mandate a virtual constellation, consortium or other type of forced settlement. **Fourth**, Leo One USA strongly supports the Commission's basic technical proposals to timeshare new NVNG MSS systems with the National Oceanic & Atmospheric Administration ("NOAA") and Department of Defense ("DOD") MetSat programs as well as with the currently licensed VITA NVNG MSS system. **Fifth**, Leo One USA has reviewed the frequency plans specified for Little LEO System 1, Little LEO System 2, and Little LEO System 3 and recommends certain alterations to these plans in order to facilitate the introduction of more competition for NVNG MSS services. Specifically, Leo One USA is proposing as replacements a new Little LEO System A and Little LEO System B to ensure the possibility that at least two new global systems will be licensed that are capable of providing near real-time services.

Only through this or some other similar reconfiguration will the public be provided the opportunity to enjoy the benefits of new competitive NVNG MSS systems. Taken together, expeditious adoption of these policies will enable the public to quickly reap the benefits of new competitive NVNG MSS systems.

II. BACKGROUND

The FCC's consideration of NVNG MSS systems began in 1990 with the submission of applications by Orbcomm, Starsys and VITA. Each of these applicants proposed vastly different system designs. Orbcomm, using FDMA technology, requested authority to implement a 36 satellite system which could provide close to near real-time services. Starsys proposed a 24 satellite system with a much lower response time and significantly lower data rate using CDMA technology. VITA proposed a two-satellite system to serve not-for-profit organizations. These three companies, with vastly different technical designs and business plans, comprised the first Little LEO processing round.

In 1990, the Commission had not yet allocated spectrum for Little LEOs nor promulgated rules for processing Little LEO applications. In 1991, the FCC commenced a rulemaking proposing frequency allocations for the NVNG MSS.[3] These allocations were formally adopted in 1993.[4] Also

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[3] *Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum to the Fixed-Satellite Service and the Mobile-Satellite Service for Low-Earth Orbit Satellites*, 6 FCC Rcd. 5932 (1991).

[4] *Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum to the Fixed-Satellite Service and the Mobile-Satellite Service for Low-Earth Orbit Satellites*, 8 FCC Rcd. 1812 (1993).

in 1993, the FCC initiated and concluded a rule making to promulgate service rules for NVNG MSS system applications and operations.[5] This rulemaking adopted rules covering the following areas:

- emission limitations
- financial qualifications
- replacement space stations
- intersystem coordination
- reporting requirements
- earth station licensing
- construction milestones
- frequency assignments

Pursuant to these rules, the FCC awarded NVNG MSS licenses to Orbcomm in 1993[6], and VITA[7] and GE Starsys[8] in 1995.

A second processing round was initiated when Leo One USA submitted its application, which sought authority to implement a 48 satellite system using FDMA technology capable of serving markets in which customers place a high premium on timeliness of message delivery. This

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5 *Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Non-Voice, Non-Geostationary Mobile Satellite Service*, 8 FCC Rcd. 8450 (1993).

6 *Application of Orbcomm for Authority to Construct, Launch and Operate a Non-Voice Non-Geostationary Mobile Satellite System*, 9 FCC Rcd. 6476 (1994); *recon.* 10 FCC Rcd. 7801 (1995).

7 *Application of VITA for Authority to Construct, Launch and Operate a Non-Voice, Non-Geostationary Mobile Satellite System*, 11 FCC Rcd. 1358 (1995) (recon. pending).

8 *Application of Starsys for Authority to Construct, Launch and Operate a Non-Voice, Non-Geostationary Mobile Satellite System*, 11 FCC Rcd. 1237 (1995). In 1995, GE Americom acquired an 80% interest in Starsys and renamed the company GE Starsys.

application was placed on Public Notice on September 16, 1994.[9] At the same time the FCC initiated the second NVNG MSS processing round and invited interested parties wishing to submit NVNG MSS applications to be considered concurrently with the Leo One USA application to file such applications by November 16, 1994. On that date the following parties submitted applications: CTA Commercial Systems, Inc. ("CTA"), E-Sat, Inc., ("E-SAT"), Final Analysis Communication Services ("FACS") and GE American Communications ("GE Americom"). Additionally, first round applicants, VITA and Orbcomm also submitted requests on November 16, 1996 seeking to use all the remaining spectrum allocated at WRC-92 to the NVNG-MSS. Also, a GE Starsys amendment seeking assignment of an additional 50 kHz feeder link was later deferred to the second NVNG MSS processing round.[10] These eight companies comprise the second NVNG MSS processing round.

Leo One USA has repeatedly urged the Commission to apply its existing rules and policies as a means to resolve the second NVNG MSS processing round. Although Leo One USA still believes the application of the existing rules is the appropriate regulatory course, it agrees that the new rules and policies proposed by the Commission, with the modifications proposed herein by Leo One USA, will enable this proceeding to be successfully resolved.

III. EXCLUDING EXISTING LICENSEES FROM THE SECOND PROCESSING ROUND WILL ENHANCE COMPETITION

Leo One USA strongly supports the Commission's fundamental policy goal for this proceeding "to increase competition and bring new services to market as quickly as possible."[11] As

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9 Public Notice, Report No. DS-1459, DA 94-1011 (Sept. 16, 1994).

10 *See Application of Starsys for Authority to Construct, Launch and Operate a Non-Voice, Non-Geostationary Mobile Satellite System*, 11 FCC Rcd. 1237 (1995) at ¶¶ 19 and 21.

11 *Notice* at 2.

the Commission states in the Notice, additional systems "will enhance competition and will lead to lower prices and increased service options for customers."[12] This goal is rooted in sixty years of FCC policy "to make available, so far as possible, to all the people of the United States a rapid, efficient, nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges."[13] In order to fulfill this goal, the Commission must exclude the existing licensees from consideration in the current processing round. Otherwise, the NVNG MSS market will become balkanized, enabling the existing licensees to exert market power contrary to the public interest. The following analysis of the markets for NVNG MSS services and the history of this proceeding all support this action.

A. The Markets to be Served by the NVNG MSS Systems Will Not be Competitive Without New Second Round Licensees[14]

Leo One USA fully supports the Commission's conclusion that limiting second round licenses to new entrants will enhance competition.[15] An analysis of the competitive characteristics of the NVNG MSS industry as currently structured leads directly to the conclusion that additional economically viable entrants, capable of effectively competing with the existing licensees and providing new and innovative services, are needed if the public is to reap the maximum benefits of a competitive NVNG MSS service. Leo One USA details its analysis below.

1. Methodology Employed

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12 *Id.*

13 47 U.S.C. § 151.

14 This subsection summarizes a full economic analysis prepared by Microeconomics Consulting and Research Associates, Inc. ("MICRA") for Leo One USA contained in Appendix A.

15 Notice at ¶ 11 *et. seq.*

The Notice proposes that the structure-conduct-performance (SCP) paradigm of modern industrial organization be used to analyze how market performance would be affected by the introduction of new competitive Little LEO systems. The main application of the SCP paradigm in public policy has been to antitrust policy and, especially, in the analysis and evaluation of mergers. The Federal Trade Commission ("FTC") and the Department of Justice ("DOJ"), as the agencies responsible for enforcing the antitrust laws and for encouraging competitive policies at regulatory agencies, have developed an analytical framework for applying the SCP paradigm in practice. That framework, which reflects both the large body of analytical work done within the agencies and in academia, as well as the considerable experience of those agencies with mergers and other competitive issues, has been embodied in the DOJ and FTC *Merger Guidelines*.[16]

The *Guidelines* provide a general analytical framework that can be used to evaluate a broad range of events or policies that affect competition (e.g., mergers, anticompetitive practices or, as in this case, the effect of alternative licensing procedures on competition and consumers). In this competitive analysis, the framework and methodology of the *Guidelines* are used to analyze the relevant issues on which the Notice requests comment, including demand considerations (i.e., market definition), supply considerations (i.e., identifying the participants in that market and quantifying their market share and competitive significance), and the relationship between structure, conduct and performance (i.e., evaluating the effect of entry and the resulting change in market structure on the level of competition in the market and on the potential for unilateral or coordinated exercises of market power and, hence, on prices and consumer welfare).

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16 *Department of Justice and Federal Trade Commission Horizontal Merger Guidelines,* April 2, 1992 ("*Guidelines*").

2. The Market Structure

The first step in determining the effect of any policy toward market structure is to define the relevant market or markets. Market definition focuses on demand substitution factors (i.e., possible consumer responses) while supply substitution factors (i.e., possible production responses) enter into the analysis in the identification of firms that participate in the relevant market and the analysis of entry. The *Guidelines* formally define a market as:

> a product or group of products and a geographic area in which it is produced or sold such that a hypothetical [monopolist] of those products in that area likely would impose at least a "small but significant and non-transitory" increase in price [above the competitive level], assuming the terms of sale of all other products are held constant. A relevant market is a group of products and a geographic area that is no bigger than necessary to satisfy this test.[17]

Using this definition as a means to identify markets, it becomes clear that a single market for NVNG MSS services does not exist. There are numerous markets in which NVNG MSS systems may offer services. Although factual determinations at this stage of the NVNG MSS industry are necessarily subjective, Leo One USA has identified a number of distinct markets as defined by the *Guidelines*. Each service market is a relevant market under the *Guidelines* because a hypothetical monopolist of the service could raise the price of that service by at least 10% above the competitive level without losing so many sales to other products or services that the price increase would be unprofitable. These markets are divided into the following five distinct categories:

- tracking
- monitoring

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[17] *Guidelines* at 7.

- emergency services
- messaging
- transaction business services

These categories are then further divided based on coverage, length of outages (ability to provide near real-time services) and the particular industry being served. Paraphrasing the *Guidelines* language quoted above, and using one of the markets identified in Table 1 "Markets and Supplies" which appears in Appendix A for example, near real-time[18] (or outages less than five minutes) nationwide ubiquitous truck dispatch and monitoring services is a relevant market because a hypothetical monoplist (either a Little LEO or another satellite or even ground-based system) that was the only present and future supplier of a near real-time service with nationwide, ubiquitous coverage could raise the price of such services by at least a small but significant amount (e.g., 5-10%[19]) above the competitive level without having so many consumers of that service shift to other products.[20] This conjecture is supported by the fact that the current monopoly of QUALCOMM's OmniTRACS services incorporates equipment and service costs significantly above that of Little LEO provider of substitutable services (i.e., $3,000 for subscriber equipment and $80 per month).

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18 Defined as service with outages less than five minutes.

19 In general, the *Guidelines* define a "small but significant and nontransitory" increase in price as "a price increase of five percent lasting for the foreseeable future." The analysis described here posits a ten percent price increase to ensure a conservative delineation of the relevant markets: if a hypothetical monopolist of a given service could profitably impose a ten percent price increase, then, *a fortiori*, it could impose a five percent price increase. *Guidelines* §1.11.

20 The relevant markets may even be smaller than this if the hypothetical monopolist likely would discriminate in prices charged to different groups of buyers, distinguished, for example, by their uses or locations. Such potential price discrimination is not unlikely between buyer gorups within many of the markets identified above, so that a more detailed analysis could well delineate different relevant markets corresponding to each such buyer group. Buyer groups can be defined based on their niche application in addition to timeliness and coverage requirements.